

2003P06347US; 60,426-613

IN THE CLAIMS

1.-34. (Cancelled)

35. (Currently Amended) A vehicle weight classification system comprising:

a seat assembly having a seat frame for supporting a seat bottom;

a seat belt assembly for securing a seat occupant to said seat assembly;

a rigid member attached to said seat belt assembly and having a first end for supporting a seat belt portion and a second end integrally formed with said first end for attachment to a vehicle structure;

a plurality of weight sensors mounted to said seat frame for generating a plurality of weight signals in response to a weight force applied to said seat bottom;

at least one seat belt force sensor for generating a seat belt force signal, said seat belt force sensor being mounted on said rigid member between said first and second ends for measuring a force exerted on said rigid member by a tension force applied to said seat belt portion;

an electronic control unit for receiving said weight signals and seat belt force signals to determine occupant weight and center of gravity, generating an occupant classification based on said occupant weight and center of gravity, and transmitting an output control signal based on said occupant classification; and

an airbag module for receiving said output control signal to control airbag deployment based on said occupant classification;

said seat assembly including a seat mount for attachment to a vehicle floor and said plurality of weight sensors comprises a first sensor mounted at a front right side corner of said seat bottom between said seat frame and said seat mount, a second sensor mounted at a front left side corner of said seat bottom between said seat frame and said seat mount, a third sensor

2003P06347US; 60,426-613

mounted at a rear right side corner of said seat bottom between said seat frame and said seat mount, and a fourth sensor mounted at a rear left side corner of said seat bottom between said seat frame and said seat mount; and

said first end of said rigid member being positioned at an angle relative to said second end of said rigid member with said seat belt force sensor being directly mounted to said rigid member adjacent said second end.

36.-37. (Cancelled)

38. (Currently Amended) A system according to claim ~~35-37~~ including an electrical connector mounted directly to said rigid member adjacent to said seat belt force sensor for receiving strain measurements from said strain gage and transmitting said measurements to said electronic control unit to determine the magnitude of the tension force.

39. (Previously Presented) A system according to claim 38 wherein said rigid member includes a neck portion positioned between said first and second ends having a width that is less than the width of said first and second ends and wherein said seat belt force sensor is mounted on said neck portion.

40. (Previously Presented) A system according to claim 39 wherein said first end includes an elongated slot for a loop attachment to said seat belt portion and said second end includes at least one aperture for receiving a fastener for attachment to the vehicle structure and wherein said electrical connector is mounted to said rigid member adjacent to said second end between said aperture and said neck portion.

2003P06347US; 60,426-613

41. (Previously Presented) A system according to claim 39 wherein said first end of said rigid member is positioned at an angle relative to said neck portion and said second end of said rigid member.

42. (Previously Presented) A system according to claim 39 wherein said electrical connector includes a main body portion for supporting at least one electrical component, said main body portion being directly mounted to said rigid member between said neck portion and said second end.

43. (Previously Presented) An assembly according to claim 42 wherein said main body member comprises a rigid housing member and wherein said at least one electrical component comprises a microprocessor mounted within said rigid housing member.

44. (Previously Presented) A system according to claim 43 wherein said at least one seat belt force sensor comprises at least one strain gage assembly.

45. (Previously Presented) A system according to claim 44 wherein each of said weight sensors includes a first end mounted to a seat track member with a first fastener, a second end mounted to a vehicle structure with a second fastener, and a central bendable portion that extends between said first and second ends.

46. (Previously Presented) A system according to claim 45 including a strain gage assembly mounted to said central bendable portion and an electronics package with a flexible printed circuit board and an application specific integrated circuit, said electronics package being in electrical communication with said strain gage assembly.

2003P06347US; 60,426-613

47. (Previously Presented) A system according to claim 46 wherein said central bendable portion includes a first surface and a second surface facing in an opposite direction from said first surface wherein one of said first or second surfaces includes a groove and the other of said first or second surfaces supports said strain gage assembly.

48. (Previously Presented) A system according to claim 46 wherein said electronic control unit includes a plastic housing with integrated insert molded sealed connectors for attachment and connection to said weight sensors.

49. (Currently Amended) ~~A system according to claim 35 wherein vehicle weight classification system comprising:~~

a seat assembly having a seat frame for supporting a seat bottom;

a seat belt assembly for securing a seat occupant to said seat assembly;

a rigid member attached to said seat belt assembly and having a first end for supporting a seat belt portion and a second end integrally formed with said first end for attachment to a vehicle structure;

a plurality of weight sensors mounted to said seat frame for generating a plurality of weight signals in response to a weight force applied to said seat bottom;

at least one seat belt force sensor for generating a seat belt force signal, said seat belt force sensor being mounted on said rigid member between said first and second ends for measuring a force exerted on said rigid member by a tension force applied to said seat belt portion;

an electronic control unit for receiving said weight signals and seat belt force signals to determine occupant weight and center of gravity, generating an occupant classification based on

2003P06347US; 60,426-613

said occupant weight and center of gravity, and transmitting an output control signal based on said occupant classification;

an airbag module for receiving said output control signal to control airbag deployment based on said occupant classification; and

said rigid member includes a body portion positioned between and integrally formed with said first and second ends and wherein said first end is directly coupled to seat belt material and said seat belt force sensor is directly mounted to said body portion.

50. (Currently Amended) A vehicle weight classification system comprising:

a seat assembly having a seat frame for supporting a seat bottom;

a seat belt assembly for securing a seat occupant to said seat assembly;

a rigid member having a body portion, a first end for supporting a seat belt portion of said seat belt assembly and a second end adapted for attachment to a fixed structure wherein said first and second ends are integrally formed with said body portion;

a plurality of weight sensors mounted to said seat frame for generating a plurality of weight signals in response to a weight force applied to said seat bottom;

at least one seat belt force sensor for generating a seat belt force signal, said seat belt force sensor being mounted on said body portion of said rigid member between said first and second ends for measuring a force exerted on said rigid member by a tension force applied to said seat belt portion; and

an electronic control unit for receiving said weight signals and seat belt force signals to determine occupant weight and center of gravity, generating an occupant classification based on said occupant weight and center of gravity, and transmitting an output control signal based on

2003P06347US; 60,426-613

said occupant classification to control airbag deployment based on said occupant classification;
and

said first end of said rigid member is positioned at an angle relative to said second end of said rigid member with said seat belt force sensor being directly mounted to said rigid member adjacent said second end.

51. (Cancelled)

52. (Currently Amended) A ~~system according to claim 50 wherein~~ vehicle weight classification system comprising:

a seat assembly having a seat frame for supporting a seat bottom;

a seat belt assembly for securing a seat occupant to said seat assembly;

a rigid member having a body portion, a first end for supporting a seat belt portion of said seat belt assembly and a second end adapted for attachment to a fixed structure wherein said first and second ends are integrally formed with said body portion;

a plurality of weight sensors mounted to said seat frame for generating a plurality of weight signals in response to a weight force applied to said seat bottom;

at least one seat belt force sensor for generating a seat belt force signal, said seat belt force sensor being mounted on said body portion of said rigid member between said first and second ends for measuring a force exerted on said rigid member by a tension force applied to said seat belt portion;

an electronic control unit for receiving said weight signals and seat belt force signals to determine occupant weight and center of gravity, generating an occupant classification based on said occupant weight and center of gravity, and transmitting an output control signal based on

2003P06347US; 60,426-613

said occupant classification to control airbag deployment based on said occupant classification;
and

said rigid member includes a neck portion positioned between said first and second ends having a width that is less than the width of said first and second ends and wherein said seat belt force sensor is mounted on said neck portion.